Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently amended) A semiconductor laser diode comprising:

a body of a semiconductor material having therein a waveguide region which is not intentionally doped and which is of a material which substantially confines photons therein and allows the flow of photons therealong;

means within the waveguide region for generating an optical mode of photons; and

a clad region on each side of the waveguide region, the clad regions being at least partially doped to be of opposite conductivity type;

wherein:

said photon generating means [being] is thinner than the thickness of the waveguide region and [being] is spaced from the clad [layers] regions;

the thickness of the waveguide region and the composition of the waveguide and clad regions [being] are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 5%;

the waveguide region is of a thickness of at least 500 nanometers; and

the waveguide region has a doping level of no greater than $5\times10^{16}/cm^3$.

2-3. (Canceled)

4. (Currently amended) The semiconductor laser diode of claim [3] 1 in which the materials of the waveguide region and the clad regions have a refractive index which provides confinement of the optical mode to the waveguide region with an overlap of the optical mode into the clad regions of no greater than 5%.

5. (Original) The semiconductor laser diode of claim 4 in which the means for generating photons in the waveguide region includes at least one quantum well region.

6. (Original) The semiconductor laser diode of claim 5 in which the means for generating photons in the waveguide region includes a plurality of spaced quantum well regions with a barrier region between each pair of adjacent quantum well regions.

7. (Original) The semiconductor laser diode of claim 5 in which the clad regions are of a semiconductor material having a lower index of refraction than the materials of the portions of the waveguide region adjacent the clad regions.

8. (Original) The semiconductor laser diode of claim 7 in which the portions of the waveguide region on each side of the quantum well region is of a semiconductor material having a bandgap larger than that of the quantum well region.

9. (Original) The semiconductor laser diode of claim 8 in which the portion of the waveguide region on each side of the quantum well region is of uniform composition throughout its thickness.

10. (Original) The semiconductor laser diode of claim 8 in which each of the portions of the waveguide region on each side of the quantum well region has an inner portion adjacent the quantum well region which has a bandgap greater than the quantum well region and an outer portion adjacent the clad region which has a bandgap greater than that of the inner portion.

11. (Original) The semiconductor laser diode of claim 8 in which the portion of the waveguide region on each side of the quantum well region has a graded composition.

12. (Currently amended) A semiconductor laser diode comprising:

a body of a semiconductor material having top and bottom surfaces and opposed end surface;

a waveguide region in the body extending across the body between the end surfaces, said waveguide region being not intentionally doped and being of a material which substantially confines photons therein and allows the flow of photons therealong;

means in the waveguide region for generating an optical mode of photons;

a first clad region of one conductivity type between the waveguide region and the top surface of the body; and

a second clad region of the opposite conductivity type between the waveguide region and the bottom surface of the body;

wherein:

said photon generating means [being] is thinner than the thickness of the waveguide region and [being] is spaced from the clad region;

the thickness of the waveguide region and the composition of the waveguide and clad regions [being] are such that the generated optical mode does not overlap into the clad regions from the waveguide region more than about 5%;

the waveguide region is of a thickness of at least 500 nanometers; and

the waveguide region has a doping level of not greater than about $5\times10^{16}/cm^3$.

13-14. (Canceled)

15. (Currently amended) The semiconductor laser diode of claim [14] 12 in which the materials of the waveguide region and the clad regions have a refractive index which provides confinement of the optical mode to the waveguide region with an overlap of the optical mode into the clad regions of no greater than 5%.

16. (Original) The semiconductor laser diode of claim 15 in which the means for generating photons in the waveguide region includes at least one quantum well region.

17. (Original) The semiconductor laser diode of claim 16 in which the means for generating photons in the waveguide region includes a plurality of spaced quantum well regions.

18. (Original) The semiconductor laser diode of claim 16 in which the clad regions are of a semiconductor material having a lower index of refraction than the materials of the portions of the waveguide regions adjacent the clad regions.

19. (Original) The semiconductor laser diode of claim 18 in which the portions of the waveguide region on each side of the quantum well region is of a semiconductor material having a bandgap larger than that of the quantum well regions.

20. (Currently amended) A semiconductor laser diode comprising:

a body of a semiconductor material having therein a waveguide region which is not intentionally doped and which is of a material which substantially confines photons therein and allows the flow of photons therealong;

means within the waveguide region for generating an optical mode of photons; and

a clad region on each side of the waveguide region, the clad regions being at least partially doped to be of opposite conductivity type,

wherein said photon generating means is thinner than the thickness of the waveguide region and is spaced from the clad regions,

wherein at least a portion of the waveguide region on each side of the means for generating an optical mode of photons is of a uniform composition throughout its thickness, [and]

wherein the thickness of the waveguide regions and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 5%; and

wherein the means for generating photons in the waveguide region includes a plurality of spaced quantum well regions with a barrier region between each pair of adjacent quantum well regions.

21. (Previously presented) The semiconductor laser diode of claim 20, wherein the waveguide region is of a thickness of at least 500 nanometers.

22. (Previously presented) The semiconductor laser diode of claim 20, wherein the waveguide region has a doping level of no greater than $5\times10^{16}/cm^3$.

23. (Previously presented) The semiconductor laser diode of claim 20, wherein the materials of the waveguide region and the clad regions have a refractive index which provides confinement of the optical mode to the waveguide region with an overlap of the optical mode into the clad regions of no greater than 5%.

24. (Currently amended) The semiconductor laser diode of claim [20] 56, wherein the means for generating photons in the waveguide region includes at least one quantum well region.

25. (Currently amended) The semiconductor laser diode of claim [20] 56, wherein the means for generating photons in the waveguide region includes a plurality of spaced quantum well regions with a barrier region between each pair of adjacent quantum well regions.

26. (Previously presented) The semiconductor laser diode of claim 20, wherein the clad regions are of a semiconductor material having a lower index of refraction than materials of portions of the waveguide region adjacent the clad regions.

27. (Previously presented) The semiconductor laser diode of claim 24, wherein portions of the waveguide region on each side of the quantum well region are of a semiconductor material having a bandgap larger than that of the quantum well region.

28. (Previously presented) The semiconductor laser diode of claim 24, wherein portions of the waveguide region on each side of the quantum well region each have an inner portion adjacent the quantum well region with a bandgap greater than the quantum well region and an outer portion adjacent the clad region with a bandgap greater than that of the inner portion.

29. (Previously presented) The semiconductor laser diode of claim 20, wherein the thickness of the waveguide region and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 2%.

30. (Previously presented) The semiconductor laser diode of claim 20, wherein the waveguide region has a length greater than about 2.0 mm.

31. (Previously presented) The semiconductor laser diode of claim 20, wherein the waveguide region is of a thickness of about 0.7 μm.

32. (Previously presented) The semiconductor laser diode of claim 20, wherein the waveguide region is of a thickness of about 1.3 μm.

33. (Previously presented) The semiconductor laser diode of claim 24, wherein the quantum well region consists essentially of InGaAs.

34. (Previously presented) The semiconductor laser diode of claim 20, wherein the waveguide region consists essentially of AlGaAs.

35. (Previously presented) The semiconductor laser diode of claim 24, wherein the quantum well region consists essentially of InGaAsP.

36. (Previously presented) The semiconductor laser diode of claim 20, wherein the waveguide region consists essentially of InGaAsP.

37. (Previously presented) The semiconductor laser diode of claim 20, wherein the waveguide region comprises In and Ga.

38. (Currently amended) A semiconductor laser diode comprising:

a body of a semiconductor material having therein a waveguide region comprising In and Ga, which is not intentionally doped and which substantially confines photons therein and allows the flow of photons therealong;

a quantum well region within the waveguide region for generating an optical mode of photons; and

a clad region on each side of the waveguide region, the clad regions being at least partially doped to be of opposite conductivity type;

wherein said quantum well region is thinner than the thickness of the waveguide region and is spaced from the clad regions;

[and] wherein the thickness of the waveguide regions and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 5%; and

wherein the quantum well region consists essentially of InGaAs.

39. (Canceled)

40. (Previously presented) The semiconductor laser diode of claim 38, wherein the waveguide region consists essentially of AlGaAs.

41. (Currently amended) [The] A semiconductor laser diode [of claim 38] comprising:

a body of a semiconductor material having therein a waveguide region comprising In and Ga, which is not intentionally doped and which substantially confines photons therein and allows the flow of photons therealong;

a quantum well region within the waveguide region for generating an optical mode of photons; and

a clad region on each side of the waveguide region, the clad regions being at least partially doped to be of opposite conductivity type;

wherein said quantum well region is thinner than the thickness of the waveguide region and is spaced from the clad regions;

wherein the thickness of the waveguide regions and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 5%, and

wherein the quantum well region consists essentially of InGaAsP.

42. (Currently amended) [The] A semiconductor laser diode [of claim 38] comprising:

a body of a semiconductor material having therein a waveguide region comprising In and Ga, which is not intentionally doped and which substantially confines photons therein and allows the flow of photons therealong;

a quantum well region within the waveguide region for generating an optical mode of photons; and

a clad region on each side of the waveguide region, the clad regions being at least partially doped to be of opposite conductivity type;

wherein said quantum well region is thinner than the thickness of the waveguide region and is spaced from the clad regions;

wherein the thickness of the waveguide regions and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 5%, and

wherein the waveguide region consists essentially of InGaAsP.

43. (Previously presented) The semiconductor laser diode of claim 38, wherein the waveguide region is of a thickness of at least 500 nanometers.

44. (Currently amended) [The] A semiconductor laser diode [of claim 38] comprising:

a body of a semiconductor material having therein a waveguide region comprising In and Ga, which is not intentionally doped and which substantially confines photons therein and allows the flow of photons therealong;

a quantum well region within the waveguide region for generating an optical mode of photons; and

a clad region on each side of the waveguide region, the clad regions being at least partially doped to be of opposite conductivity type;

wherein said quantum well region is thinner than the thickness of the waveguide region and is spaced from the clad regions;

wherein the thickness of the waveguide regions and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 5%, and

wherein the waveguide region has a doping level of no greater than $5\times10^{16}/cm^3$.

45. (Previously presented) The semiconductor laser diode of claim 38, wherein the materials of the waveguide region and the clad regions have a refractive index which provides

confinement of the optical mode to the waveguide region with an overlap of the optical mode into the clad regions of no greater than 5%.

46. (Currently amended) [The] A semiconductor laser diode [of claim 38, further] comprising:

a body of a semiconductor material having therein a waveguide region comprising In and Ga, which is not intentionally doped and which substantially confines photons therein and allows the flow of photons therealong;

a plurality of spaced quantum well regions within the waveguide region for generating an optical mode of photons with a barrier region between each pair of adjacent quantum well regions; and

a clad region on each side of the waveguide region, the clad regions being at least partially doped to be of opposite conductivity type;

wherein each of said quantum well regions is thinner than the thickness of the waveguide region and is spaced from the clad regions;

wherein the thickness of the waveguide regions and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 5%.

47. (Currently amended) [The] A semiconductor laser diode [of claim 38] comprising:

a body of a semiconductor material having therein a waveguide region comprising In and Ga, which is not intentionally doped and which substantially confines photons therein and allows the flow of photons therealong;

a quantum well region within the waveguide region for generating an optical mode of photons; and

a clad region on each side of the waveguide region, the clad regions being at least partially doped to be of opposite conductivity type;

wherein said quantum well region is thinner than the thickness of the waveguide region and is spaced from the clad regions;

wherein the thickness of the waveguide regions and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 5%, and

wherein the clad regions are of a semiconductor material having a lower index of refraction than the materials of portions of the waveguide region adjacent the clad regions.

48. (Currently amended) [The] A semiconductor laser diode [of claim 38] comprising:

a body of a semiconductor material having therein a waveguide region comprising In and Ga, which is not intentionally doped and which substantially confines photons therein and allows the flow of photons therealong;

a quantum well region within the waveguide region for generating an optical mode of photons; and

a clad region on each side of the waveguide region, the clad regions being at least partially doped to be of opposite conductivity type;

wherein said quantum well region is thinner than the thickness of the waveguide region and is spaced from the clad regions;

wherein the thickness of the waveguide regions and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 5%, and

wherein portions of the waveguide region on each side of the quantum well region are of a semiconductor material having a bandgap larger than that of the quantum well region.

49. (Currently amended) [The] A semiconductor laser diode [of claim 38] comprising:

a body of a semiconductor material having therein a waveguide region comprising In and Ga, which is not intentionally doped and which substantially confines photons therein and allows the flow of photons therealong;

a quantum well region within the waveguide region for generating an optical mode of photons; and

a clad region on each side of the waveguide region, the clad regions being at least partially doped to be of opposite conductivity type;

wherein said quantum well region is thinner than the thickness of the waveguide region and is spaced from the clad regions;

wherein the thickness of the waveguide regions and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 5%, and

wherein portions of the waveguide region on each side of the quantum well region each have an inner portion adjacent the quantum well region with a bandgap greater than the quantum well region and an outer portion adjacent the clad region with a bandgap greater than that of the inner portion.

50. (Previously presented) The semiconductor laser diode of claim 38, wherein a portion of the waveguide region on each side of the quantum well region has a graded composition.

51. (Previously presented) The semiconductor laser diode of claim 38, wherein a portion of the waveguide region on each side of the quantum well region has a uniform composition.

52. (Previously presented) The semiconductor laser diode of claim 38, wherein the thickness of the waveguide region and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 2%.

53. (Currently amended) [The] A semiconductor laser diode [of claim 38] comprising:

a body of a semiconductor material having therein a waveguide region comprising In and Ga, which is not intentionally doped and which substantially confines photons therein and allows the flow of photons therealong;

a quantum well region within the waveguide region for generating an optical mode of photons; and

a clad region on each side of the waveguide region, the clad regions being at least partially doped to be of opposite conductivity type;

wherein said quantum well region is thinner than the thickness of the waveguide region and is spaced from the clad regions;

wherein the thickness of the waveguide regions and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 5%, and

wherein the waveguide region has a length greater than about 2.0 mm.

54. (Previously presented) The semiconductor laser diode of claim 38, wherein the waveguide region has a thickness of about 0.7 μm.

55. (Currently amended) [The] A semiconductor laser diode of [claim 38] comprising:

a body of a semiconductor material having therein a waveguide region comprising In and Ga, which is not intentionally doped and which substantially confines photons therein and allows the flow of photons therealong;

a quantum well region within the waveguide region for generating an optical mode of photons; and

a clad region on each side of the waveguide region, the clad regions being at least partially doped to be of opposite conductivity type;

wherein said quantum well region is thinner than the thickness of the waveguide region and is spaced from the clad regions;

wherein the thickness of the waveguide regions and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 5%, and

wherein the waveguide region has a thickness of about 1.3 μm.

56. (New) A semiconductor laser diode comprising:

a body of a semiconductor material having therein a waveguide region which is not intentionally doped and which is of a material which substantially confines photons therein and allows the flow of photons therealong;

means within the waveguide region for generating an optical mode of photons; and

a clad region on each side of the waveguide region, the clad regions being at least partially doped to be of opposite conductivity type,

wherein said photon generating means is thinner than the thickness of the waveguide region and is spaced from the clad regions,

wherein at least a portion of the waveguide region on each side of the means for generating an optical mode of photons is of a uniform composition throughout its thickness,

wherein the thickness of the waveguide regions and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 5%; and

wherein the waveguide region has a doping level of no greater than $5\times10^{16}/cm^3$.

57. (New) The semiconductor laser diode of claim 56, wherein the waveguide region is of a thickness of at least 500 nanometers.

58. (New) The semiconductor laser diode of claim 56, wherein the materials of the waveguide region and the clad regions have a refractive index that provides confinement of the optical mode to the waveguide region with an overlap of the optical mode into the clad regions of no greater than 5%.

59. (New) The semiconductor laser diode of claim 56, wherein the clad regions are of a semiconductor material having a lower index of refraction than materials of portions of the waveguide region adjacent the clad regions.

60. (New) The semiconductor laser diode of claim 56, wherein the thickness of the waveguide region and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 2%.

61. (New) The semiconductor laser diode of claim 56, wherein the waveguide region has a length greater than about 2.0 mm.

62. (New) The semiconductor laser diode of claim 56, wherein the waveguide region is of a thickness of about 0.7 μm.

63. (New) The semiconductor laser diode of claim 56, wherein the waveguide region is of a thickness of about 1.3 μm.

64. (New) The semiconductor laser diode of claim 56, wherein the waveguide region consists essentially of AlGaAs.

65. (New) The semiconductor laser diode of claim 56, wherein the waveguide region consists essentially of InGaAsP.

66. (New) The semiconductor laser diode of claim 56, wherein the waveguide region comprises In and Ga.

67. (New) A semiconductor laser diode comprising:

a body of a semiconductor material having therein a waveguide region which is not intentionally doped and which is of a material which substantially confines photons therein and allows the flow of photons therealong;

means within the waveguide region for generating an optical mode of photons; and

a clad region on each side of the waveguide region, the clad regions being at least partially doped to be of opposite conductivity type,

wherein said photon generating means is thinner than the thickness of the waveguide region and is spaced from the clad regions,

wherein at least a portion of the waveguide region on each side of the means for generating an optical mode of photons is of a uniform composition throughout its thickness,

wherein the thickness of the waveguide regions and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 5%, and

wherein the clad regions are of a semiconductor material having a lower index of refraction than materials of portions of the waveguide region adjacent the clad regions.

68. (New) The semiconductor laser diode of claim 67, wherein the waveguide region is of a thickness of at least 500 nanometers.

69. (New) The semiconductor laser diode of claim 67, wherein the materials of the waveguide region and the clad regions have a refractive index which provides confinement of the optical mode to the waveguide region with an overlap of the optical mode into the clad regions of no greater than 5%.

70. (New) The semiconductor laser diode of claim 67, wherein the means for generating photons in the waveguide region includes at least one quantum well region.

71. (New) The semiconductor laser diode of claim 67, wherein the means for generating photons in the waveguide region includes a plurality of spaced quantum well regions with a barrier region between each pair of adjacent quantum well regions.

72. (New) The semiconductor laser diode of claim 67, wherein the thickness of the waveguide region and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 2%.

73. (New) The semiconductor laser diode of claim 67, wherein the waveguide region has a length greater than about 2.0 mm.

74. (New) The semiconductor laser diode of claim 67, wherein the waveguide region is of a thickness of about 0.7 μm.

75. (New) The semiconductor laser diode of claim 67, wherein the waveguide region is of a thickness of about 1.3 μm.

76. (New) The semiconductor laser diode of claim 67, wherein the waveguide region consists essentially of AlGaAs.

77. (New) The semiconductor laser diode of claim 67, wherein the waveguide region consists essentially of InGaAsP.

78. (New) The semiconductor laser diode of claim 67, wherein the waveguide region comprises In and Ga.

79. (New) A semiconductor laser diode comprising:

a body of a semiconductor material having therein a waveguide region which is not intentionally doped and which is of a material which substantially confines photons therein and allows the flow of photons therealong;

means within the waveguide region for generating an optical mode of photons; and

a clad region on each side of the waveguide region, the clad regions being at least partially doped to be of opposite conductivity type,

wherein said photon generating means is thinner than the thickness of the waveguide region and is spaced from the clad regions,

wherein at least a portion of the waveguide region on each side of the means for generating an optical mode of photons is of a uniform composition throughout its thickness,

wherein the thickness of the waveguide regions and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 5%, and

wherein the waveguide region has a length greater than about 2.0 mm.

80. (New) The semiconductor laser diode of claim 79, wherein the waveguide region is of a thickness of at least 500 nanometers.

81. (New) The semiconductor laser diode of claim 79, wherein the materials of the waveguide region and the clad regions have a refractive index which provides confinement of the optical mode to the waveguide region with an overlap of the optical mode into the clad regions of no greater than 5%.

82. (New) The semiconductor laser diode of claim 79, wherein the means for generating photons in the waveguide region includes at least one quantum well region.

83. (New) The semiconductor laser diode of claim 79, wherein the thickness of the waveguide region and the composition of the waveguide and clad regions are such that an

overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 2%.

84. (New) The semiconductor laser diode of claim 79, wherein the waveguide region is of a thickness of about 0.7 μm.

85. (New) The semiconductor laser diode of claim 79, wherein the waveguide region is of a thickness of about 1.3 μm.

86. (New) The semiconductor laser diode of claim 79, wherein the waveguide region consists essentially of AlGaAs.

87. (New) The semiconductor laser diode of claim 79, wherein the waveguide region consists essentially of InGaAsP.

88. (New) The semiconductor laser diode of claim 79, wherein the waveguide region comprises In and Ga.

89. (New) A semiconductor laser diode comprising:

a body of a semiconductor material having therein a waveguide region which is not intentionally doped and which is of a material which substantially confines photons therein and allows the flow of photons therealong;

means within the waveguide region for generating an optical mode of photons; and

a clad region on each side of the waveguide region, the clad regions being at least partially doped to be of opposite conductivity type,

wherein said photon generating means is thinner than the thickness of the waveguide region and is spaced from the clad regions,

wherein at least a portion of the waveguide region on each side of the means for generating an optical mode of photons is of a uniform composition throughout its thickness,

wherein the thickness of the waveguide regions and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 5%, and

wherein the waveguide region is of a thickness of about 1.3 μm.

90. (New) The semiconductor laser diode of claim 89, wherein the waveguide region is of a thickness of at least 500 nanometers.

91. (New) The semiconductor laser diode of claim 89, wherein the materials of the waveguide region and the clad regions have a refractive index which provides confinement of the optical mode to the waveguide region with an overlap of the optical mode into the clad regions of no greater than 5%.

92. (New) The semiconductor laser diode of claim 89, wherein the means for generating photons in the waveguide region includes at least one quantum well region.

93. (New) The semiconductor laser diode of claim 89, wherein the thickness of the waveguide region and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 2%.

94. (New) The semiconductor laser diode of claim 89, wherein the waveguide region consists essentially of AlGaAs.

95. (New) The semiconductor laser diode of claim 89, wherein the waveguide region consists essentially of InGaAsP.

96. (New) The semiconductor laser diode of claim 89, wherein the waveguide region comprises In and Ga.

97. (New) A semiconductor laser diode comprising:

a body of a semiconductor material having therein a waveguide region which is not intentionally doped and which is of a material which substantially confines photons therein and allows the flow of photons therealong;

means within the waveguide region for generating an optical mode of photons; and

a clad region on each side of the waveguide region, the clad regions being at least partially doped to be of opposite conductivity type,

wherein said photon generating means is thinner than the thickness of the waveguide region and is spaced from the clad regions,

wherein at least a portion of the waveguide region on each side of the means for generating an optical mode of photons is of a uniform composition throughout its thickness,

wherein the thickness of the waveguide regions and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 5%, and

wherein the waveguide region consists essentially of InGaAsP.

98. (New) The semiconductor laser diode of claim 97, wherein the waveguide region is of a thickness of at least 500 nanometers.

99. (New) The semiconductor laser diode of claim 97, wherein the materials of the waveguide region and the clad regions have a refractive index which provides confinement of the optical mode to the waveguide region with an overlap of the optical mode into the clad regions of no greater than 5%.

100. (New) The semiconductor laser diode of claim 97, wherein the means for generating photons in the waveguide region includes at least one quantum well region.

101. (New) The semiconductor laser diode of claim 97, wherein the thickness of the waveguide region and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 2%.

102. (New) The semiconductor laser diode of claim 97, wherein the waveguide region is of a thickness of about 0.7 μm.

103. (New) The semiconductor laser diode of claim 97, wherein the quantum well region consists essentially of InGaAsP.

104. (New) A semiconductor laser diode comprising:

a body of a semiconductor material having therein a waveguide region which is not intentionally doped and which is of a material which substantially confines photons therein and allows the flow of photons therealong;

means within the waveguide region for generating an optical mode of photons; and

a clad region on each side of the waveguide region, the clad regions being at least partially doped to be of opposite conductivity type,

wherein said photon generating means is thinner than the thickness of the waveguide region and is spaced from the clad regions,

wherein at least a portion of the waveguide region on each side of the means for generating an optical mode of photons is of a uniform composition throughout its thickness,

wherein the thickness of the waveguide regions and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 5%, and

wherein the waveguide region comprises In and Ga.

105. (New) The semiconductor laser diode of claim 104, wherein the waveguide region is of a thickness of at least 500 nanometers.

106. (New) The semiconductor laser diode of claim 104, wherein the materials of the waveguide region and the clad regions have a refractive index which provides confinement of the optical mode to the waveguide region with an overlap of the optical mode into the clad regions of no greater than 5%.

107. (New) The semiconductor laser diode of claim 104, wherein the means for generating photons in the waveguide region includes at least one quantum well region.

108. (New) The semiconductor laser diode of claim 104, wherein the thickness of the waveguide region and the composition of the waveguide and clad regions are such that an overlapping of the optical mode generated in the waveguide region into the clad regions is not greater than about 2%.

109. (New) The semiconductor laser diode of claim 104, wherein the waveguide region is of a thickness of about 0.7 μm.